IN THE CLAIMS:

1. (Original) A wide-sense, non-blocking wavelength division multiplexed (WDM) cross-connect device, the device comprising:

a first fabric being adapted to receive a first number of input fibers at an input side of said first fabric, wherein at least one of said input fibers is capable of carrying at least two signals having different wavelengths;

a second fabric being adapted to output signals onto first number of output fibers at an output side of said second fabric, and wherein at least one of said output fibers is capable of carrying at least two signals having different wavelengths;

a third fabric being adapted to be optically coupled on an input side of said third fabric to said input fibers and to be optically coupled on an output side of said third fabric to said output fibers;

at least one wavelength interchanger coupled by optical fibers to an output side of said first fabric and to an input side of said second fabric; and

a controller coupled to said first, second and third fabrics and to said at least one wavelength interchanger, the controller being configured to execute a routing algorithm that causes a demand that requires a change of wavelength to be routed through at least one of said at least one wavelength interchanger and that causes demands that do not require a change in wavelength to be routed through said third fabric.

2. (Original) The device of claim 1, wherein said first number of input fibers is k, said first number of output fibers is k and wherein the device comprises k wavelength interchangers, k being an integer that is greater than or equal to 1.

3. (Original) The device of claim 2, wherein the first, second and third fabrics each comprise at least one optical switch that receives the control signals output by the controller, each optical switch of the first, second and third fabrics being optically coupled by optical fibers to respective input and output ports of the first, second and third fabrics, wherein each optical switch of the first, second and third fabrics causes signals received by the respective optical switches to be routed to output ports of the first, second and third fabrics, respectively, in accordance with control signals received by the optical switches.

4. (Original) The device of claim 3, wherein the device is wide-sense non-blocking in terms of both wavelength and routing, and wherein each of said k wavelength interchangers is controlled by control signals received thereby to select a wavelength that a signal received on an optical fiber coupling the output side of the first fabric to the wavelength interchanger is to utilize when the signal is routed by the wavelength interchanger onto an optical fiber coupling the wavelength interchanger to the input side of the second fabric.

5. (Original) The device of claim 4, wherein each of said k input fibers is capable of carrying a plurality of signals having different wavelengths, and wherein each of said k output fibers is capable of carrying a plurality of signals having different wavelengths.

6. (Original) A wide-sense, non-blocking wavelength division multiplexed (WDM) cross-connect device, the device comprising:

a first fabric being adapted to receive k input fibers at an input side of said first fabric, wherein at least one of said k input fibers is capable of carrying at least two signals having different wavelengths;

a second fabric being adapted to output signals onto k output fibers at an output side of

said second fabric, and wherein at least one of said k output fibers is capable of carrying at least two signals having different wavelengths;

a third fabric being adapted to be optically coupled on an input side of said third fabric to said k input fibers and to be optically coupled on an output side of said third fabric to said k output fibers;

k wavelength interchangers coupled by optical fibers to an output side of said first fabric and to an input side of said second fabric; and

a controller coupled to said first, second and third fabrics and to said k wavelength interchangers, the controller being logically configured to execute a routing algorithm that causes demands that require a change of wavelength to be routed through at least one of said k wavelength interchangers and that causes demands that do not require a change in wavelength to be routed through said third fabric, and wherein k is an integer that is equal to or greater than 1.

7. (Original) The device of claim 6, wherein the first, second and third fabrics each comprise at least one optical switch that receives the control signals output by the controller, each optical switch of the first, second and third fabrics being optically coupled by optical fibers to respective input and output ports of the first, second and third fabrics, wherein each optical switch of the first, second and third fabrics causes signals received by the respective optical switches to be routed to output ports of the first, second and third fabrics, respectively, in accordance with control signals received by the optical switches.

8. (Original) The device of claim 7, wherein the device is wide-sense non-blocking in terms of both wavelength and routing, and wherein each of said k wavelength interchangers is controlled by control signals received thereby to select a wavelength that a signal received on an

optical fiber coupling the output side of the first fabric to the wavelength interchanger is to utilize when the signal is routed by the wavelength interchanger onto an optical fiber coupling the wavelength interchanges to the input side of the second fabric.

9. (Currently Amended) A wavelength division multiplexed (WDM) device, the device comprising:

a first fabric having k input ports, each of the input ports being adapted to be optically coupled to an input optical fiber;

a second fabric having k output ports, each of the output ports being adapted to be optically coupled to an output ~~input~~ optical fiber;

k wavelength interchangers, each wavelength interchanger having an input port and an output port, each wavelength interchanger being optically coupled at an input port thereof to an optical fiber that is optically coupled to an output port of the first fabric, each wavelength interchanger being optically coupled at an output port thereof to an optical fiber that is optically coupled to an input port of the second fabric; and

a third fabric having k input ports and k output ports, each of the input ports of the third fabric being optically coupled directly to a distinct one of the ~~to an~~ input optical fibers ~~fiber~~ of the first fabric and each of the output ports being optically coupled directly to a distinct one of the ~~to an~~ output optical fibers ~~fiber~~ of the second fabric.

10. (Original) The device of claim 8, further comprising:

a controller coupled to said first, second and third fabrics and to said k wavelength interchangers, the controller being logically configured to execute a routing algorithm that causes demands that require a change of wavelength to be routed through at least one of said k

wavelength interchangers and that causes demands that do not require a change in wavelength to be routed through said third fabric, and wherein k is an integer that is equal to or greater than 1.

11. (Original) The device of claim 10, wherein the first, second and third fabrics each comprise at least one optical switch that receives the control signals output by the controller, each optical switch of the first, second and third fabrics being optically coupled by optical fibers to respective input and output ports of the first, second and third fabrics, wherein each optical switch of the first, second and third fabrics causes signals received by the respective optical switches to be routed to output ports of the first, second and third fabrics, respectively, in accordance with control signals received by the optical switches.

12. (Original) The device of claim 11, wherein the device is wide-sense non-blocking in terms of both wavelength and routing, and wherein each of said k wavelength interchangers is controlled by control signals received thereby to select a wavelength that a signal received on an optical fiber coupling the output side of the first fabric to the wavelength interchanger is to utilize when the signal is routed by the wavelength interchanger onto an optical fiber coupling the wavelength interchanger to the input side of the second fabric.

13. (Currently Amended) A method for providing a wavelength division multiplexing cross-connect device with wide-sense, non-blocking properties, the method comprising the steps of:

interconnecting a first fabric to a second fabric via k wavelength interchangers, optically coupling an input side of the first fabric to k input optical fibers;

optically coupling an output side of the second fabric to k output optical fibers;

optically coupling said k input optical fibers <u>directly</u> to an input side of a third fabric; and

optically coupling said k output optical fibers <u>directly</u> to an output side of said third fabric.

14. (Original)The method of claim 13, wherein k is an integer that is greater than or equal to 1.

15. (Original) The method of claim 14, further comprising the step of:

configuring a controller with logic to control operations of the first, second, third fabrics and to control operations of said k wavelength interchangers, such that a demand that requires a change in wavelength is routed through the first fabric, through one said k wavelength interchangers and through said second fabric, and such that a demand that does not require a change in wavelength is routed through said third fabric.

16. (Cancelled)

17. (Previously Presented) A computer program for providing a wavelength division multiplexing (WDM) cross-connect device with wide-sense, non-blocking properties, the program being embodied on a computer readable medium, the program comprising:

code for controlling operations of a first, a second, and a third fabric and k wavelength interchanqers of the WDM cross-connect device, the code determining whether or not a demand requires a change in wavelength, wherein if the code determines that a demand requires a change in wavelength, the code causes the demand to be routed through the first fabric, through at least one of said k wavelength interchangers and through said second fabric, and wherein if the code determines that a demand does not require a change in wavelength, the code causes the demand to be routed through said third fabric, and wherein the first fabric is connected to the second fabric via k wavelength interchangers and optical fibers, and wherein k input optical fibers are optically

coupled to an input side of the first fabric, and wherein an output side of the second fabric is optically coupled to k output optical fibers, said k input optical fibers being optically coupled to an input side of the third fabric, said k output optical fibers being optically coupled to an output side of said third fabric.

18. (Original) The program of claim 17, wherein k is an integer that is equal to or greater than 1.